ABSTRACT

A method is described for increasing the likelihood of the occurrence of an arrhythmia in a heart, particularly a ventricular arrhythmia of the type leading to Sudden Cardiac Death. The method includes the steps of creating an atrioventricular block in the heart of an animal test subject, inducing a myocardial infarction in the heart of the test subject, and then stimulating myocardial hyperinnervation the test subject. In a specific example described herein, the atrioventricular block is created by ablating the atrioventricular node of the heart using an ablation catheter. The myocardial infarction is induced by ligating the left anterior descending portion of the coronary artery. Myocardial hyperinnervation is stimulated by application of Nerve Growth Factor or other neurotrophic vectors to the left stellate ganglion. The test subject is an adult canine. By creating an atrioventricular block and a myocardial infarction within the heart of an adult canine test subject, then stimulating nerve growth within the left stellate ganglion of the subject using Nerve Growth Factor, it has been found that there is a significant increase in the likelihood of Sudden Cardiac Death arising from ventricular arrhythmias. It is believed that the Sudden Cardiac Death of the test subject arises in a manner very similar to circumstances wherein Sudden Cardiac Death occurs in human patients subject to a previous myocardial infarction. Thus, the method facilitates the collection of data pertinent to conditions within the heart arising prior to Sudden Cardiac Death and for developing and testing therapies intended to prevent Sudden Cardiac Death.